

Plantar pododermatitis in turkeys: results of a preliminary study looking at incidence and severity in the UK

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Introduction

The *Codes of recommendations for the welfare of livestock — turkeys* (Ministry of Agriculture, Fisheries and Food, 1991) state that one of the five basic welfare needs of turkeys is the prevention, or rapid diagnosis and treatment of, injury, disease and infestation. Plantar pododermatitis is one of a number of non-infectious causes of lameness in turkeys (Farm Animal Welfare Council, 1995), a condition believed to be common in the UK and therefore not unique to any single producer. Previous studies have reported an incidence of plantar pododermatitis of between 10 and 40% in turkey poults (Nairn and Watson, 1972) and as much as 88% in broilers (Greene *et al.*, 1985). It is an ulcerative condition of the skin over the plantar surface of the feet, causing suffering, particularly if the lesions become infected (Hancock, 1996). In addition to lameness, plantar pododermatitis has been found to cause reduced growth rate in turkeys (Martland, 1984) and, in broilers, to predispose birds to hock ulceration and subsequent breast lesions (Greene, *et al.*, 1985). According to Pattison (1989), unsightly breast and hock lesions may result in carcass downgrading and are of serious economic loss to the poultry industry. Wet or poor quality litter is a common cause of plantar pododermatitis, although a diet deficient in biotin can also lead to the condition developing, even with good litter quality (Thorpe, 1996).

The aims of this study were (1) to determine the incidence and severity of plantar pododermatitis within the UK turkey industry, and (2) to investigate whether this condition was likely to cause pain and suffering in affected birds.

Material and methods

Four different abattoirs across the UK were selected for this study, each of them processing turkeys which had been reared intensively in conventional, enclosed housing. Each abattoir was sampled on just

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one occasion, measuring both the incidence (% of birds affected) and severity of plantar pododermatitis at abattoirs 1, 2 and 4 and incidence only at abattoir 3. Severity of lesions on the metatarsal and digital foot pads was assessed using a graded scoring system, from 0 to 3 (Table 1), adapted from Martland (1984). A mean lesion score was subsequently calculated for each abattoir. The sample size was 43, 64, 100 and 100 feet for abattoirs 1, 2, 3 and 4 respectively.

A further 10 feet from abattoir 4, showing a range in severity of ulceration, were selected for histological analysis. Each foot was labelled and submerged in neutral buffered formalin saline for 12 days. On day 13, the feet were individually wrapped in cotton wool which had been soaked beforehand in neutral buffered formalin saline, then transported in sealed plastic bags to the Veterinary Investigation Centre, Langford, Bristol. A single sagittal section was taken through the centre of each foot pad and examined histologically.

Results

Across the four abattoirs, the incidence of plantar pododermatitis was 100% (Table 2), with a mean lesion score of 2.23. There was no significant difference ($P > 0.05$) between abattoirs for the mean lesion scores.

Histological examination showed that, at the site of the lesion, the dermis had been completely ulcerated and replaced by a zone of granulation tissue and a

Table 1 Scoring system for plantar pododermatitis (adapted from Martland, 1984)

Score	Classification
0	No plantar pododermatitis present
1	Small caps present (maximum cover $\frac{1}{4}$ of pad area)
2	Larger scabs present (occupying between $\frac{1}{4}$ and $\frac{1}{2}$ of pad area)
3	Majority of pad covered with large, deep ulcers

Table 2 Incidence of plantar pododermatitis and mean lesion score for four abattoirs

Parameter	Abattoir				s.e.d.
	1	2	3	4	
No. of feet	43	64	100	100	-
Incidence (%)	100	100	100	100	-
Mean lesion score	2.14	2.34	-	2.20	0.127

fibrino-cellular exudate, the latter merging into a thick highly cellular crust. In the superficial dermis there was diffuse infiltration by granulocytes and some oedema.

Conclusions

With an incidence of 100% across four different abattoirs, and most feet showing a moderate level of ulceration, plantar pododermatitis is clearly of major concern to the UK turkey industry. It is likely that the inflammatory response seen in cells of the dermis of affected feet would have been associated with some discomfort to the bird. As such, plantar pododermatitis can be considered as detrimental to the welfare of turkeys and research should now be instigated to determine both the exact causes of this condition and effective management practices to eliminate its occurrence.

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